AK100 Emulator for ARM User Manual

SuperARM ICE

AK100 Emulator

ARM Professional Emulator

User Guide

for ARM

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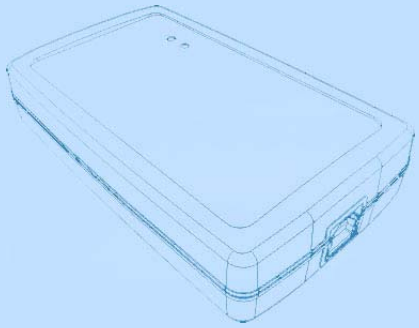
Chapter 1

AK100 Introduction



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1.1 Introduction

AK100 is a high-performance ARM emulator, which designed by Guangzhou Zhiyuan Electronics Co.,Ltd. in 2009.It supports a full range of ARM7 / ARM9 / Cortex-M0 / Cortex-M1 / Cortex-M3 / XSCALE etc.AK100 communicates with PC by USB2.0 (High Speed) interface,the speed is very fast.

This text introduces the performance and using method of AK100 that emulates ARM core.

At present,categories of ARM core that AK100 supported are as follows:

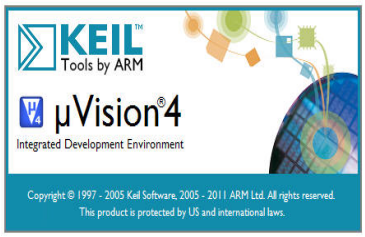
- **ARM7:**ARM7TDMI / ARM7TDMI-S / ARM7EJ-S / ARM720T;
- **ARM9:**ARM9TDMI / ARM920T / ARM922T / ARM926EJ-S / ARM946E-S / ARM966E-S;
- **Cortex:**Cortex-M0 / Cortex-M1 / Cortex-M3;
- **XSCALE:**PXA255 / PXA270.

AK100 supports all the mainstream IDE,such as TKStudio / Keil / ADS / IAR / RealView / Eclipse / SDT and so on,to ensure consistency of your development platform.

At present,IDE environments that AK100 supported are as follows:

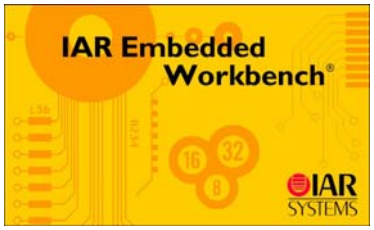
- **TKStudio:**Zhiyuan company,chinese/english language,multi-core compling/debugging,powerful editor;
- **Keil:**Keil company, english language,8051/251/C166/ARM core compling/debugging;
- **ADS:** ARM company, english language,full cores of ARM compling/debugging;
- **IAR:**IAR company, english language, multi-core compling/debugging;
- **RealView:**ARM company, english language,full cores of ARM compling/debugging.

TKStudio 4.5

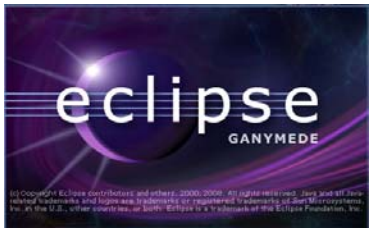

KEIL
Tools by ARM
µVision®4
Integrated Development Environment
Copyright © 1997 - 2005 Keil Software, 2005 - 2011 ARM Ltd. All rights reserved.
This product is protected by US and international laws.

Keil µV4/µV3/µV2

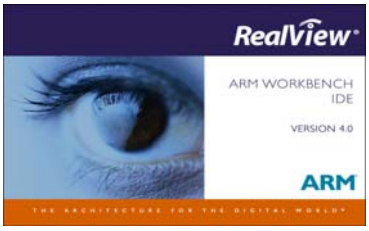
ARM ADS 1.2



IAR V6/V5/V4



Eclipse



RVDS 4.0/2.2

1.2 Performance

AK100 is a high-performance ARM emulator,it is dedicated to ARM core emulation.Its performance is the same to the TKScope's.

TKScope introduction!

TKScope embedded intelligent emulator supports a full range of ARM / DSP / AVR / 8051 / C166 / C251 / C8051F / MX Core etc, supports all the mainstream IDE,such as TKStudio / Keil / ADS / IAR / CCS / RealView / AVRStudio / SDT and so on;meantime, 64-way professional logic analyzer is built-in it, zlgLogic advanced software is fully supported.

AK100 emulator hardware index

- USB2.0 high-speed communication interface.
- The fastest speed of programming is 600KB/S.
- Standard windows USB driver supported,used immediately while linking.
- Standard 20-pin JTAG interface connects to the board,supports hot-swap.
- PC supplies it with power by USB interface,so power adapter is not necessary.
- Show working state by display led.
- Detect all the JTAG signals and the voltage of target board.
- Adapt voltage to target board automatically,support a wide range of voltage 1.8V~5V.
- The maximum clock of JTAG is 25MHz,can reach the limit speed of debugging.
- Can identify speed automatically.
- Support RTCK clock,adapt clock automatically.
- Facilitate the detection of hardware failure with TKScope doctor.

AK100 emulator

AK100 emulator function and feature

- Support a full range of ARM core,such as ARM7/ARM9/ARM11/Cortex-M0/Cortex-M1/Cortex-M3/XSCALE and so on.
- Support SWD mode of debugging Cortex-M0/Cortex-M1/Cortex-M3 core.
- Support all the mainstream IDE,such as TKStudio/Keil/ADS/IAR/RealView/SDT and so on.
- Support programming/debugging in-chip Flash in-circuit,provide Flash algorithm file of each chip.
- Provide a graphic interface for programming Flash configuration.
- Support programming/debugging out-chip Flash in-circuit,provide thousands of Flash algorithm file that are used commonly.
- Support multiple types of external Flash to programming/debugging,such as NOR/NAND/SPI and so on.
- Allow users to add their own Flash algorithm file.
- Provide a separate software for programming Flash to increase productivity.
- Support setting unlimited breakpoints in RAM while debugging.
- Support setting unlimited breakpoints in Flash while debugging.
- The speed of debugging in Flash is as fast as that in RAM,because of synchronous Flash technology,that can quickly refresh Flash breakpoints.

- Allow users to set/cancel any breakpoint while running.
- Support users to follow the running tracks of complex program by setting breakpoints of program and data.
- Rapid single-step,the fastest speed is 180 steps/sec.
- Ensure to debug target system fast and stable,which frequency is changing.
- Able to debug ARM core which is in an irregular state because of that special debugging algorithm is built-in.
- Support debugging multi-devices which connect by daisy-chain.
- Provide the perfect initialization files to hundreds of chips.
- Able to set system flexibly before and after reset/running/Flash programming,including register setting/ARM initialization/clock setting /delay/information cue an so on.

1.3 Comparison

At present,the famous ARM emulators are Ulink2/J-link.While,TKScope/AK100/AK100Pro are better,they will beat all the emulators by their perfect performances.

Table 1.1 is the comparision of famous ARM emulators.

Table 1.1 AK100/AK100Pro/TKScope K9/Ulink2/J-link performance comparison

Emulator	AK100Pro	AK100	TKScope K9	Ulink2	J-link
supported IDE *	TKStudio,Keil,ADS,IAR,RealView	TKStudio,Keil,ADS,IAR,RealView	TKStudio,Keil,ADS,IAR,RealView	Keil	Keil,ADS,IAR
RAM breakpoint	unlimited	unlimited	unlimited	unlimited	unlimited
Flash breakpoint *	unlimited	unlimited	unlimited	2max	not support external Flash
set breakpoint while running	support	support	support	support	support
RTCK	support	support	support	support	support
program in-chip Flash	support	support	support	support	support
program out-chip Flash *	support	support	support	support	support
graphic interface of programming Flash configuration *	support	support	support	not support	not support
supported types of external Flash *	NOR/NAND/SPI	NOR/NAND/SPI	NOR/NAND/SPI	NOR/NAND/SPI	NOR
users add Flash algorithm *	support	support	support	support	not support
speed of programming RAM *	1.2MB/S	600 KB/S	650 KB/S	28KB/S	600 KB/S
JTAG clock *	<=25MHz	<=25MHz	<=25MHz	<=10MHz	<=12MHz
step（step/sec） *	≈180	≈150	≈150	≈50	≈100
company	zhiyuan	zhiyuan	zhiyuan	Keil	Segger

ps:①The performances of Ulink2/J-link are from their web.

②The prominent performances of AK100/AK100Pro/TKScope K9 mark with *.

The speed of AK100/AK100Pro/TKScope K9/Ulink2/J-link programming Flash is really tested.Table 1.2 is the results.

AK100/AK100Pro/TKScope K9/Ulink2/J-link test the chip NXP LPC2138 ,all the states are the same,the size of code is 512KB,the clock of working is 77MHz.The code is programmed into Flash or RAM in turn by all the emulators,then record the time,accuracy is 0.1 sec.Any condition,the clock is RTCK or fixed JTAG 1MHz/2MHz/3MHz in turn,record four times.

Table 1.2 AK100/AK100Pro/TKScope K9/Ulink2/J-link programming speed（LPC2138）

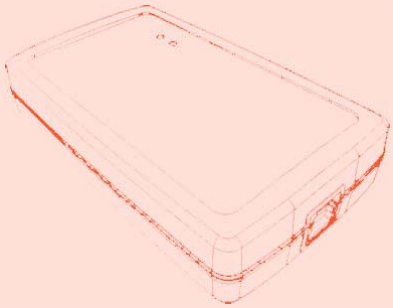
512KB Flash	JTAG 1MHz	JTAG 2MHz	JTAG 3MHz	RTCK
AK100Pro (sec)	14	8	7	6
TKScope K9 (sec)	15	9	7.5	6.5
AK100 (sec)	15	9	7.5	6.5
Ulink2 (sec)	28	28	28	28
J-link (sec)	26	20	fail	27
512KB RAM	**JTAG 1MHz**	**JTAG 2MHz**	**JTAG 3MHz**	**RTCK**
AK100Pro (sec)	6.5	3.0	2.8	2.5
TKScope K9 (sec)	6.5	3.5	3	3
AK100 (sec)	8	4.5	3.5	3
Ulink2 (sec)	23	23	23	23
J-link (sec)	7	4	fail	6

ps:①The states of testing are the same,the results are recorded really.

②The code size of programming LPC2138 is 512KB,the system clock is 77MHz.

Chapter 2

Use AK100 Emulator



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2.1 Install driver

Users must install driver before using AK100 emulator,otherwise,it can not work!The driver programme of AK100 is the same to the TKScope's.

Driver must be installed into the Keil RealView MDK directory,if you use it;else arbitrary directory.

1 Double click TKScopeSetup_ARM_en.EXE,the system will pop-up dialog box as shown in figure 2.1,then click [Next] to continue.

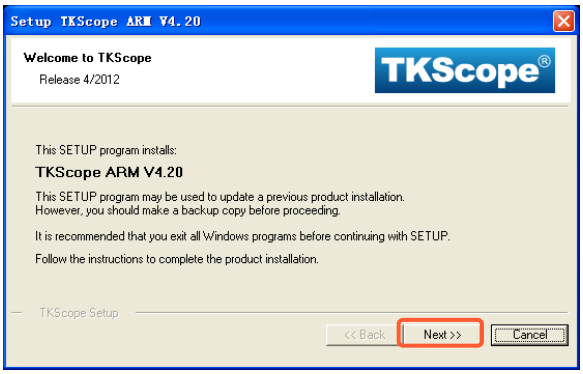

Setup TKScope ARM V4.20
Welcome to TKScope
Release 4/2012
TKScope
This SETUP program installs:
TKScope ARM V4.20
This SETUP program may be used to update a previous product installation.
However, you should make a backup copy before proceeding.
It is recommended that you exit all Windows programs before continuing with SETUP.
Follow the instructions to complete the product installation.
TKScope Setup
<< Back
Next >>
Cancel

Figure 2.1 install driver

2 For example,Keil RealView MDK is installed on C disk, then,driver must be installed in directory C:\Keil,as shown in figure 2.2.

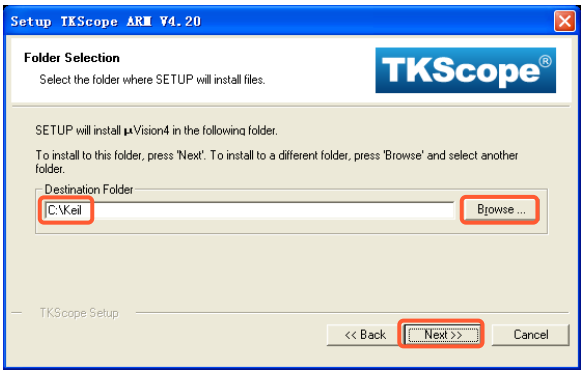
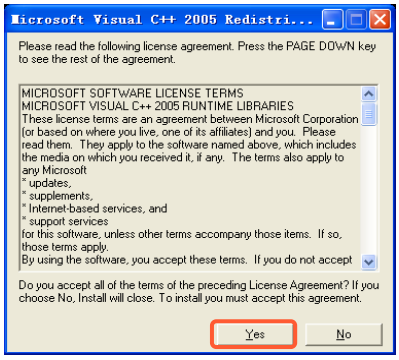

Setup TKScope ARM V4.20
Folder Selection
Select the folder where SETUP will install files.
TKScope
SETUP will install µVision4 in the following folder.
To install to this folder, press 'Next'. To install to a different folder, press 'Browse' and select another folder.
Destination Folder
C:\Keil
Browse ...
TKScope Setup
<< Back
Next >>
Cancel

Figure 2.2 driver installation path

3 It is recommended that users install vc8 from Microsoft after driver installed. Double-click vcredist_x86_en.exe, the system will pop-up dialog box as shown in figure 2.3,then click [Yes] to continue.


Microsoft Visual C++ 2005 Redistri...
Please read the following license agreement. Press the PAGE DOWN key to see the rest of the agreement.
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These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft
* updates,
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* Internet-based services, and
* support services
for this software, unless other terms accompany those items. If so, those terms apply.
By using the software, you accept these terms. If you do not accept
Do you accept all of the terms of the preceding License Agreement? If you choose No, Install will close. To install you must accept this agreement.
Yes
No

Figure 2.3 install vc8

4 Until now,all the necessary drivers of AK100 are installed.In the installation directory (example is C:\Keil\ \TKScope), you can see driver files for various environments, as shown in figure 2.4.

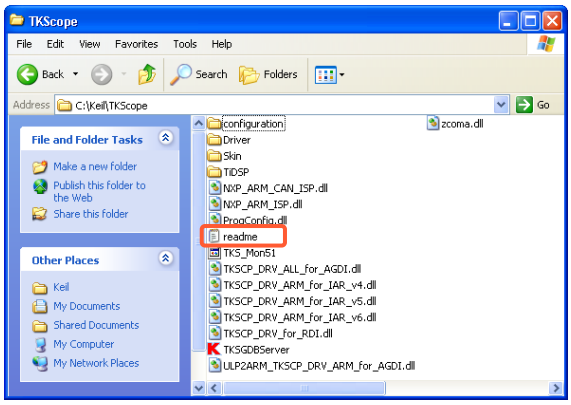


Figure 2.4 driver files

The types of various driver files and their application development environment can be read in the readme file that under the installation directory (example figure 2.4). Table 2.1 lists all the driver files for ARM at present.

Table 2.1 driver files list

driver file	driver type	application environment
ULP2ARM_TKSCP_DRV_ARM_for_AGDI.dll	ARM	Keil Uvsion4/Uvsion3/Uvsion2
TKSCP_DRV_ARM_for_IAR_v4.dll	ARM	IAR V4
TKSCP_DRV_ARM_for_IAR_v5.dll	ARM	IAR V5
TKSCP_DRV_ARM_for_IAR_v5.dll	ARM	IAR V6
TKSCP_DRV_for_RDI.dll	ARM	AXD(ADS),and other RDI agreement

2.2 Hardware connection

Users need to connect AK100 emulator with PC and target board before using it.

Connect emulator with PC

AK100 emulator connects with PC by USB,can be used immediately while linking.

After USB linked,the Power led of AK100 is lighting up,Busy led will go out after lighting up one time.
Busy led will blink incessantly while communicating.

Connect emulator with target board

AK100 emulator connects with JTAG of target board by 20Pin cable,supports hot-swap.

The system will require users to install driver of new USB equipment while using the first time.

1 AK100 emulator is used for the first time,the system will pop-up dialog box as shown in figure 2.5. Now,you need to specify location of USB driver.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
AK100pro
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

Figure 2.5 new hardware installation wizard

2 Select [Install from a list or specific location(Advanced)] option in figure 2.5,then click [Next],the system will pop-up dialog box as shown in figure 2.6.

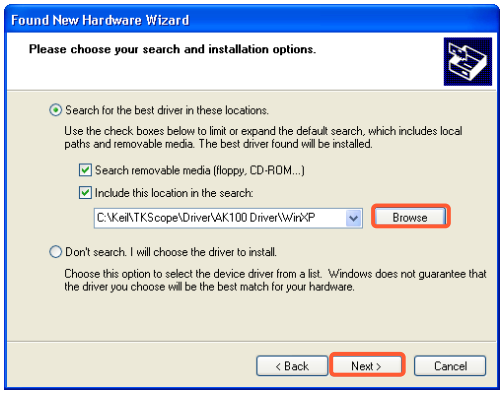

Found New Hardware Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
C:\Keil\TKScope\Driver\AK100 Driver\WinXP
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

Figure 2.6 select driver box

3 In figure 2.6,click [Browse] option,open the dialog box as shown in figure 2.7,then find the driver files in AK100 installation directory(example is C:\Keil\TKScope\Driver\ AK100 Driver\WinXP),then click [OK].

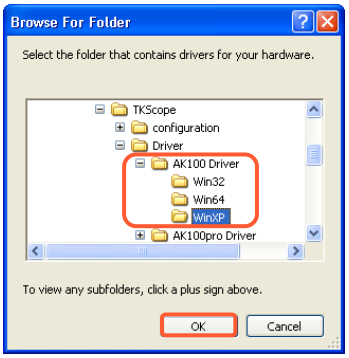
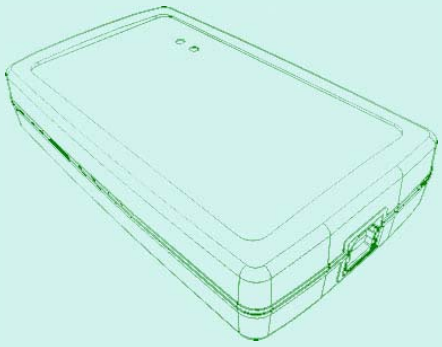


Figure 2.7 designated driver

4 After drive installation finished,the system will pop-up dialog box as shown in figure 2.8,Now,click [Finish] to complete.

Figure 2.8 new hardware installation completed

Chapter 3
Emulation ARM In Keil



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3.1 IDE settings

1 In Keil RealView MDK,open the project that is compiled ok,as shown in figure 3.1.

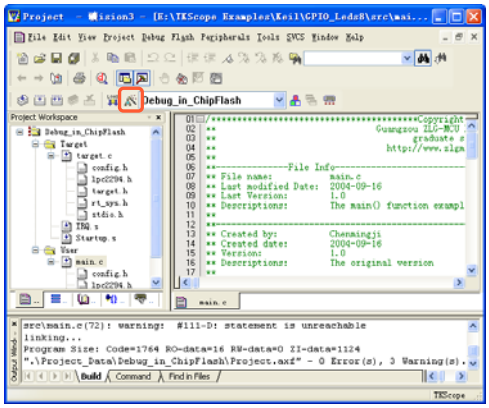


Figure 3.1 MDK interface

2 Click icon in figure 3.1,open the interface of project settings as shown in figure 3.2.

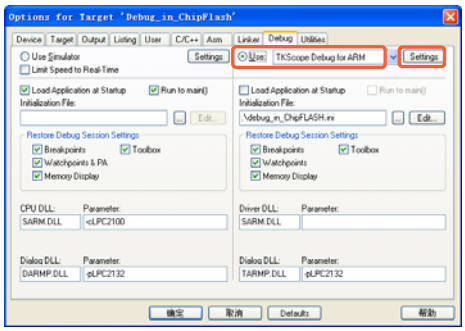


Figure 3.2 project settings interface

3 In figure 3.2,select the hardware emulation,the corresponding driver select [TKScope Debug for ARM].Then,click [Settings] into the interface of AK100 settings,as shown in figure 3.3.

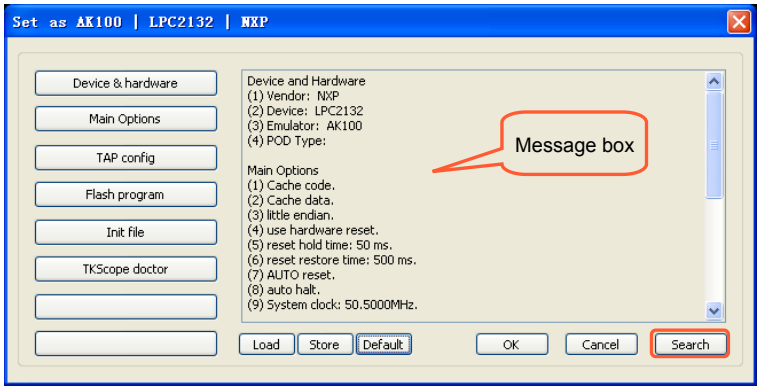


Figure 3.3 AK100 settings interface

In figure 3.3,click the left side of the various options,the system will pop-up the appropriate settings interface, while the right side of the information prompt box will appear the specific meaning of the various settings.

3.2 Emulator settings

Users must correctly set the configurations of AK100,otherwise,AK100 will not work normally.

3.2.1 Device&hardware

In figure 3.3,click [Device & hardwire] into the interface as shown in figure 3.4.

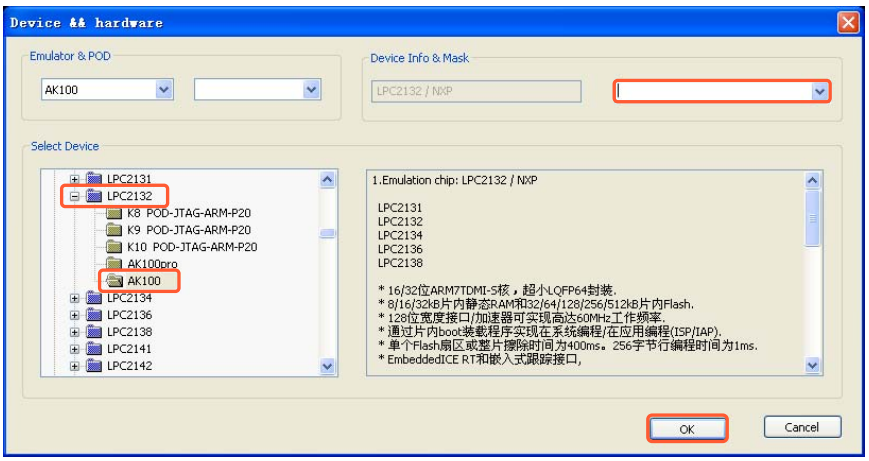


Figure 3.4 device&hardwire interface

Users must select chip and emulator correctly in [Device & hardwire] as shown in figure 3.4.

1 Users can select chip and emulator directly.
Users can input chip in [Device Info & Mask],then system will quickly find the chip automatically.

2 Users can find emulator by [Search].The method is that users only select chip,then click [OK] to return the interface as shown in figure 3.3;now,click [Search], system will check out the emulator automatically as shown in figure 3.5.

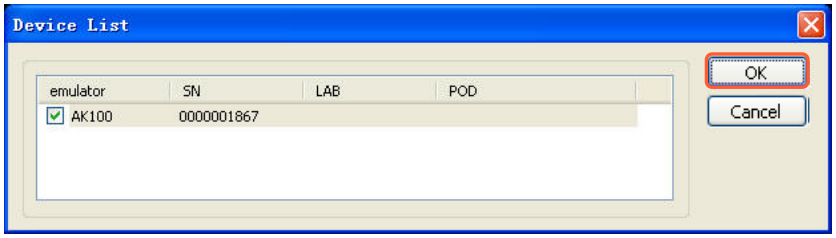


Figure 3.5 search results

3.2.2 Main options

In figure 3.3,click [Main options] into the interface as shown in figure 3.6.

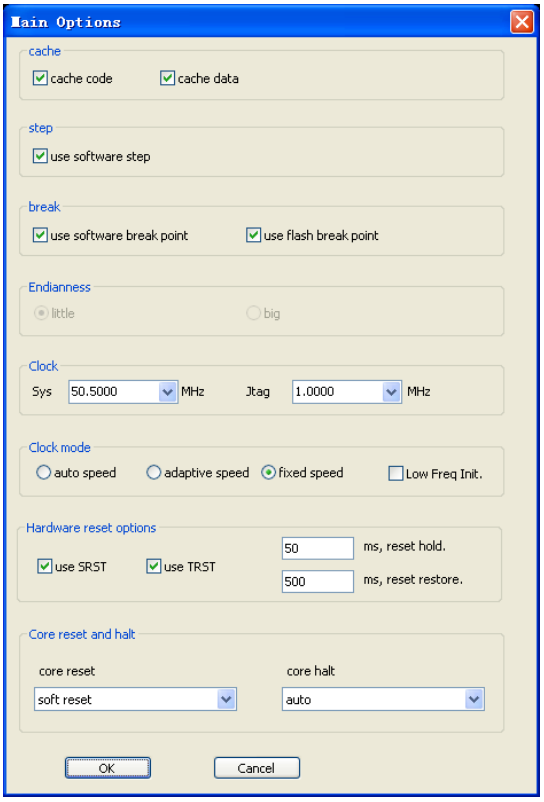


Figure 3.6 main options interface

1 Cache

[cache code]:don't read code from hardware if it be readed.
[cache data]:don't read data from hardware if it be readed, except meet a run.

2 Step

[use software step]:don't repeat programming Flash Breakpoints.

3 Break

[use software break point]:to achieve unlimited breakpoints to debug in RAM.
[use flash break point]:to achieve unlimited breakpoints to debug in flash.

4 Endianness

Choose endian for the device, big endian or little endian. If the endian of the device is fixed,no endian choice here.

5 Clock

[Sys clock]:your system clock frequence(MHz).
[JTAG clock]: your JTAG clock frequence(MHz).

6 Clock mode

[Auto speed]:auto select the best JTAG speed.
[Adaptive speed]:select max speed based on RTCK if the device has.
[Fixed speed]:select the speed you want.

7 Hardware resset options

[Use SRST]:Use SRST.

[Use TRST]:Use TRST.

[Reset hold]:Reset hold delay time(ms).

[Reset restore]:Reset release delay time(ms).

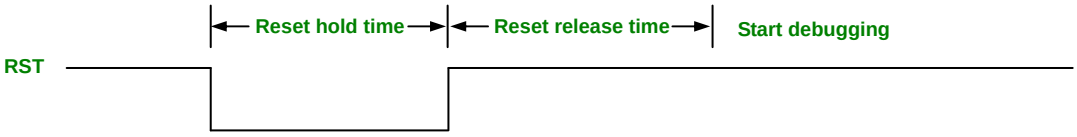


Figure 3.7 reset signal

Reset release time depend on the reset chip of target board.The time is must longer than the time of reset chip; otherwise,the emulator worked already while the target don't finish reset,then the emulator will not work!

8 Core reset and halt

[Core reset]:no reset,soft reset.

[Core halt]:auto,use DBRQ,use break point,use special method.

3.2.3 TAP config

In figure 3.3,click [TAP config] into the interface as shown infigure 3.8.

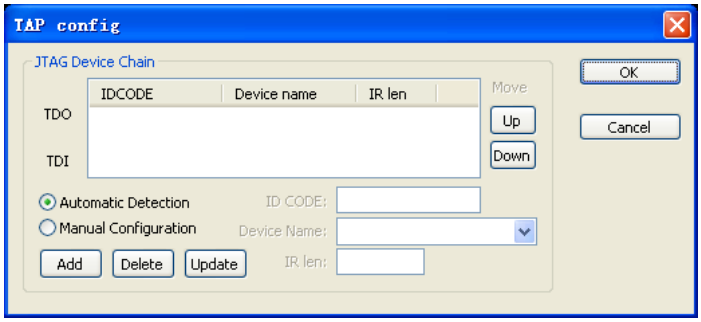


Figure 3.8 TAP config interface

[TAP config] is applied to setup the JTAG chian,include numbers of devices,IR length,active device.

It's important to setup when there is unkown device in the JTAG chian. Normally, [Automatic Detection] option will be ok.

[**devices list**]:list all devices in scan chain,include name,IR length,idcode.
[**IDCODE**]:the idcode of the device,for add,update operations.
[**name**]:the name of the device.
[**IR length**]:the IR length of the JTAG device.
[**Automatic Detection**]:setup scan chian automatically.
[**Manual Configuration**]:setup manually.
[**Add**]:add a new device in the devices list.
[**Delect**]:delect a device in the devices list.
[**Update**]:update the device in the devices list.
[**Up**]:move the selected device upward.
[**Down**]:move the selected device downward.

3.2.4 Flash program

In figure 3.3,click [Flash program] into the interface as shown in figure 3.9.

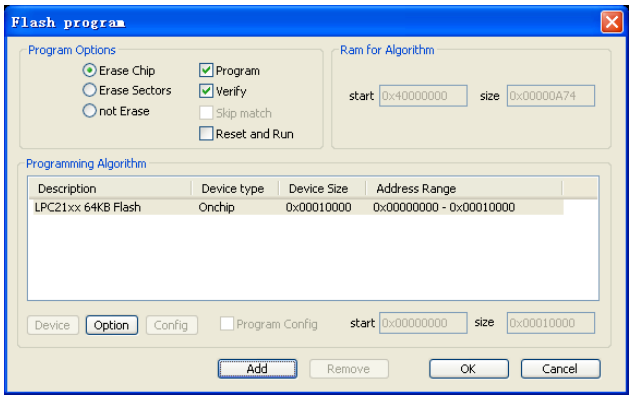


Figure 3.9 flash program interface

1 **Program options**

[Erase Chip]:erase all Flash onchip before download.
[Erase Sectors]:erase the sector that download used.
[not Erase]:don't erase the flash.

2 **RAM for Algorithm**

[start]:start address of ram for run flash program algorithm.
[size]:the ram size.

3 **Programming Algorithm**

[start]:Flash Algorithm start re_address.
[size]:Flash Algorithm start re_size.

Flash programming algorithms can be loaded up to foru,but the address can not overlap. The algorithm can be written by yourself, and loaded here.

4 **Flash access**

[Add]:add a new programming algorithm.
[Remove]:remove a programming algorithm selected.

Users must select the [program] and [verify] options,if you debug in Flash,and select [Erase Chip] or [Erase Sectors]. In addition, it is recommended users select the [skip match] option, so the repetition of Flash programming can greatly enhance the programming speed.

The follows will explain a few commonly used methods of Flash programming.

1 In chip Flash

If the chip has Flash,system will load the Flash algorithm file automatically.Now,select [Program] and [Verify],while select [Erace Chip] or [Erace Sectors].

For example, NXP LPC2132 has 64K Flash, debug this chip in Flash, the setting interface as shown in figure 3.10.

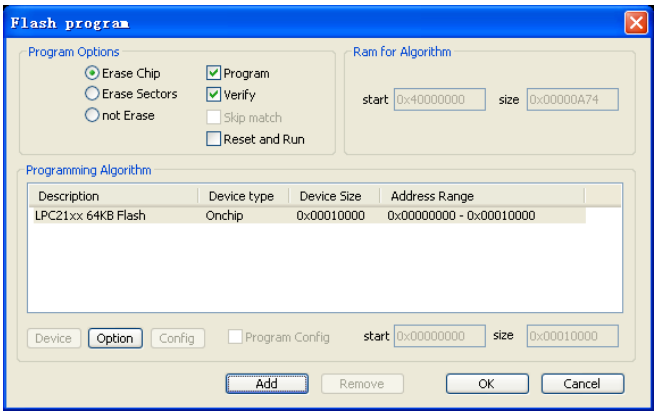


Figure 3.10 flash program interface 1

2 External Flash

If the chip has no Flash,users need to download code to external Flash.Now,users need to add the algorithm file of external Flash,and properly set the start address and size of Flash.

For example, NXP LPC2220 has no Flash, debug in external Flash SST39VF160.Click [Add] option, load the Flash algorithm file of SST39VF160.The start address is setted to 0x80000000 according to chip characteristics.The setting interface is as shown in figure 3.11.

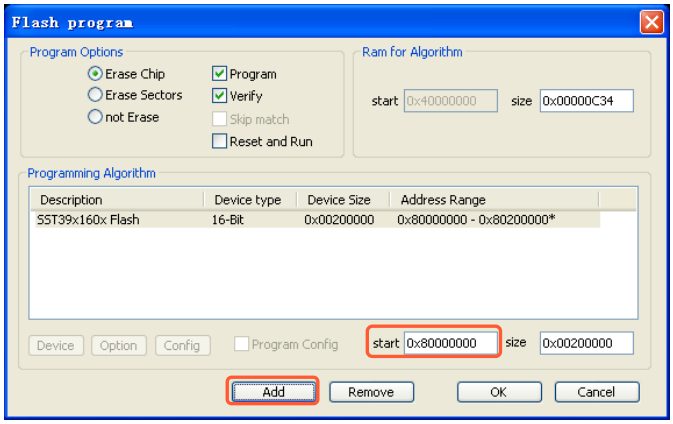


Figure 3.11 flash program interface 2

AK100 emulator supply many Flash algorithm files,they are located in driver installing directory that is TKScope\configuration\… Files are located in different folders according to Flash firms.

3 In chip Flash and external Flash

If the chip has Flash,and the board has external Flash,users need to download code to chip Flash snd external Flash in order. The system will load the chip Flash algorithm file automatically, users need to add the algorithm file of external Flash.The method of adding Flash algorithm file is the same.Users can add several Flash algorithm files.

Now,users need to set the start address and size of any Flash,the address of Flash can not overlap.

For example, NXP LPC2292 has 256K Flash,external Flash are two SST36VF1601,users debug in chip Flash and external Flash.The system will load the Flash algorithm file of LPC2292 automatically,users need to add the Flash algorithm files of SST36VF1601.Then, the start address are setted to 0x80000000 and 0x81000000 according to LPC2292 characteristics.The address of two SST36VF1601 is not overlap, the setting interface is as shown in figure 3.12.

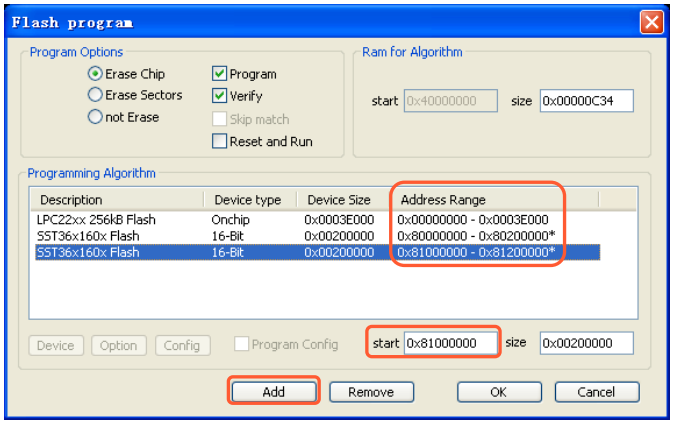


Figure 3.12 flash program interface 3

4 RAM debug

Users don't need to select [program] option while debugging in RAM, the setting interface is as shown in figure 3.13.

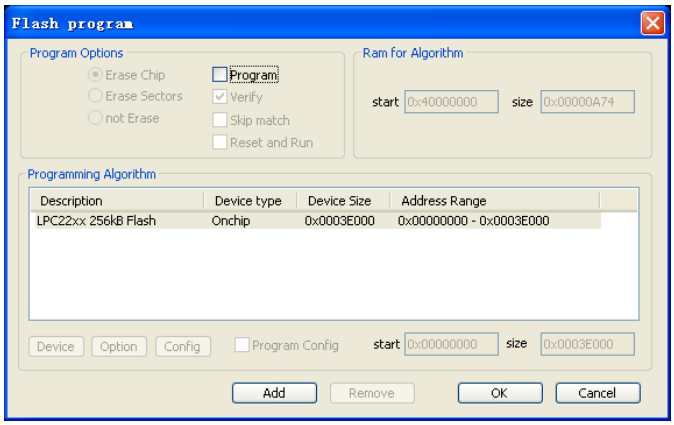


Figure 3.13 flash program interface 4

3.2.5 Init file

In figure 3.3,click [Init file] into the interface as shown in figure 3.14.

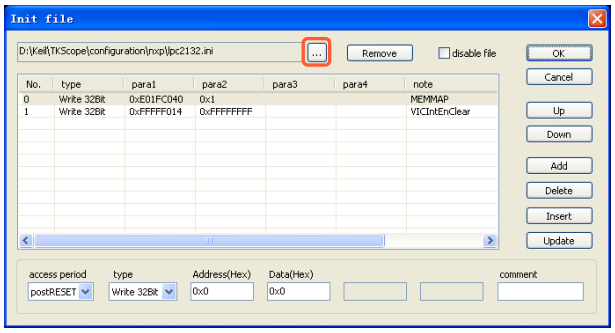


Figure 3.14 init file interface

Users can click coin ... to add the init file in figure 3.14,if you want to replace the file.

AK100 emulator supply many init files, they are located in driver installing directory that is TKScope\configuration\… Files are located in different folders according to chip firms.Users can modify the file in the interface as shown in figure 3.14.

Init macro is a file with .ini postfix,is used for executing different commands in different periods.

Table 3.1 period supported

name	meaning
preRESET	execute before reset
postRESET	execute after reset
preRUN	execute before running
postRUN	execute after running
preFlash	execute before Flash programming
postFlash	execute after Flash programming
preDownload	execute before code download
postDownload	execute after code download

Table 3.2 action supported

name	meaning
Read 32bit	read 32bit data in specified address
Read 16bit	read 16bit data in specified address
Read 8bit	read 8bit data in specified address
Write 32bit	write 32bit data in specified address
Write 16bit	write 16bit data in specified address
Write 8bit	write 8bit data in specified address
SetJtagClock	set JTAG mode and frequence (decimal)
Delay	delay,unit ms (decimal)
SetPC	set program conter (hex)
Message	output messages

It is supported unlimited times actions in every period,start number is 0.

Users can write their own init files according to their own applications.The follows is an example.

```
[postRESET]
InitStep0_Action = "Write 32bit"
InitStep0_Comment = "MEMMAP internal flash"
InitStep0_Value0 = 0xE01FC040
InitStep0_Value1 = 0x1

InitStep1_Action = "SetJtagClock"
InitStep1_Comment = "1MHz fixed JTAG "
InitStep1_Value0 = "FixedJtagClock"
InitStep1_Value1 = 10000000

InitStep2_Action = "Read 32bit"
InitStep2_Comment = "Read 32bit data"
InitStep2_Value0 = 0xE01FC080
InitStep2_Value1 = 0

InitStep3_Action = "Delay"
InitStep3_Comment = "delay 1000ms"
InitStep3_Value0 = 1000

InitStep4_Action = "Message"
InitStep4_Value0 = "Hi!This is a message!"

InitStep5_Action = "SetPC"
InitStep5_Comment = "Set PC"


[preRun]
InitStep0_Action = "SetJtagClock"
InitStep0_Comment = "Set auto clock"
InitStep0_Value0 = "AutoJtagClock"


[postRun]
InitStep0_Action = "SetJtagClock"
InitStep0_Comment = "Set RTCK"
InitStep0_Value0 = "SycJtagClock"
```

3.2.6 TKScope doctor

In figure 3.3,click [TKScope doctor] into the interface as shown in figure 3.15.

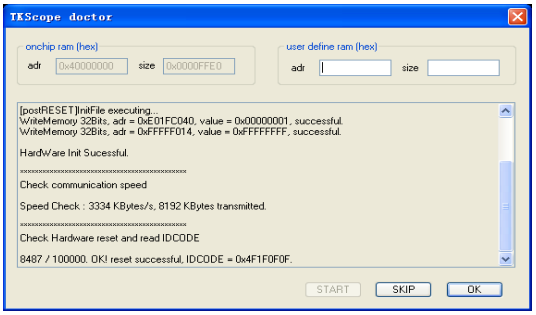


Figure 3.15 TKScope doctor

The results of TKScope doctor must be all right,otherwise, AK100 emulator will not work normally.

The function of TKScope doctor is very powerful,detecting own hardware init, USB communication,hardware reset, and reading ARM core ID 100000 times.

3.3 Debugging

AK100 emulator is setted right,users can use it debugging.

3.3.1 Start debugging

Users can click [Start/Stop Debug Session] option in [Debug] menu or click coin to into the state of debugging,as shown in figure 3.16.

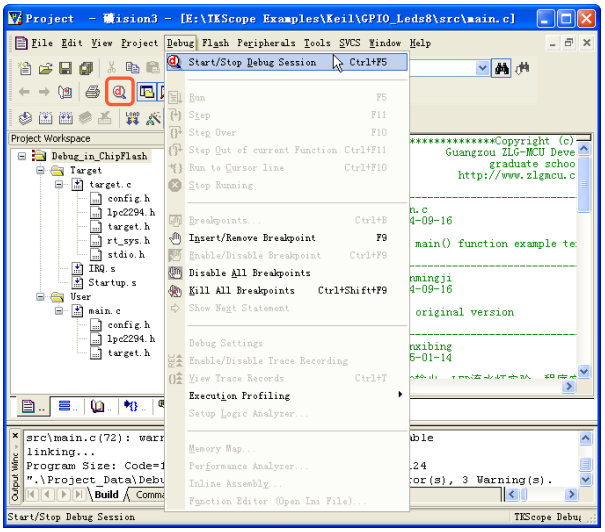


Figure 3.16 debugging interface

3.3.2 Debugging tools

In Keil RealView MDK,users can use many debugging tools as shown in follows.

Table 3.3 debugging tools in Keil RealView MDK

icon	meaning
	Start/Stop Debug Session
	Reset CPU
	Go
	Stop
	Step In
	Step
	Step Out
	Run To Cursor
	Insert/Remove Breakpoint
	Kill All Breakpoints
	Enable/Disable Breakpoint
	Disable All Breakpoints

Table 3.4 watching tools in Keil RealView MDK

icon	meaning
	Disassembly Window
	Watch and Call Stack Window
	Memory Window

3.3.3 Debugging results

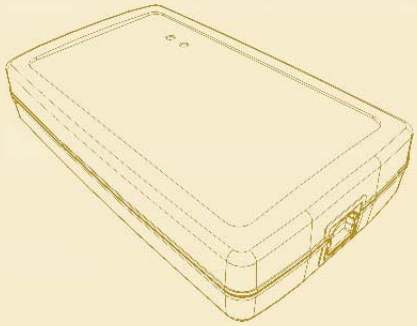
After debugging over,users can click [Start/Stop Debug Session] option in [Debug] menu or click coin to exit the state of debugging.

If users debug in RAM,the programs written in the chip RAM will lost after power down.Programs will not run in target board if power up again.

If users debug in Flash,the programs written in the Flash will save after power down.Programs will run in target board if power up again.

If users debug in Flash and encryption,programs will run in target board if power up again,but users can not debug. Unless,users erase global chip by ISP spftware,then can debug again.

Chapter 4
Emulation ARM In ADS



4.1 Add driver file **27**

4.2 Debugging **28**

4.2.1 Debugging tools 28

4.2.2 Debugging results 29

4.1 Add driver file

1 In ADS,open the project that is compiled ok, as shown in figure 4.1.Users can click icon to into the AXD, as shown in figure 4.2.

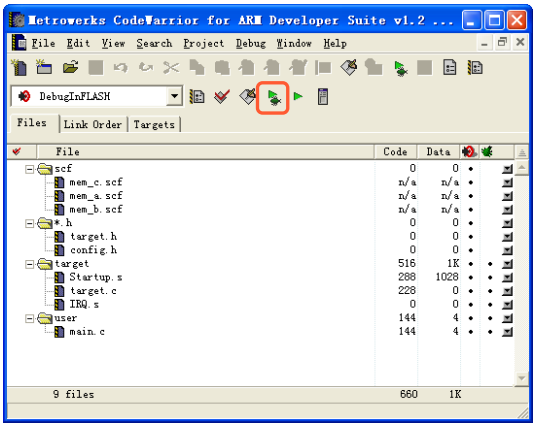


Figure 4.1 ADS interface

2 In AXD,users select the [Configure Target] option in [Options] menu,as shown in figure 4.2.

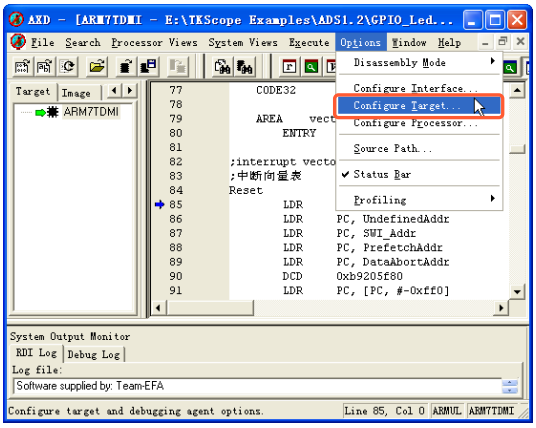


Figure 4.2 AXD interface

3 The system will pop-up [Choose Target] window as shown in figure 4.3.Click [Add] to add the driver file of AK100.

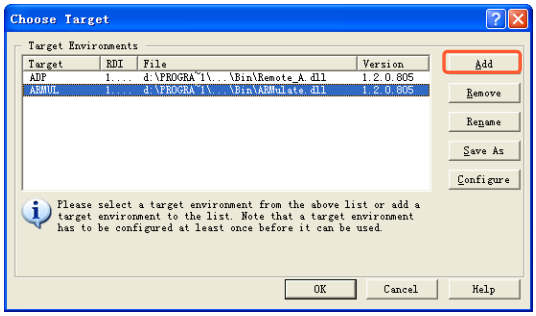

Choose Target
Target Environments
Target RDI File Version
ADP 1.... d:\PROGRA~1\...\Bin\Remote_A.dll 1.2.0.805
ARMUL 1.... d:\PROGRA~1\...\Bin\ARMulate.dll 1.2.0.805
Add
Remove
Rename
Save As
Configure
Please select a target environment from the above list or add a target environment to the list. Note that a target environment has to be configured at least once before it can be used.
OK
Cancel
Help

Figure 4.3 Choose Target window

4 The system will pop-up dialog box as shown in figure 4.4,users open the installation directory of AK100 driver(example is C:\Keil\TKScope),then select TKSCP_DRV_for_RDI.dll as shown in figure 4.4.

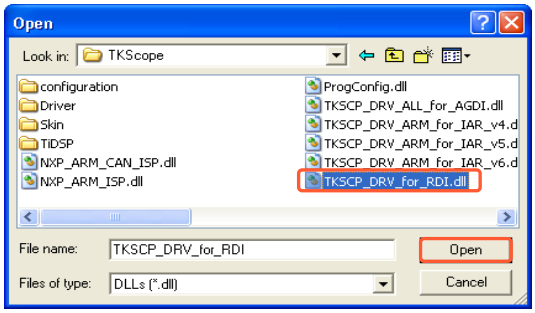


Figure 4.4 select driver file

5 The [Choose Target] window will display the currently installed driver options, as shown in figure 4.5. Users select AK100 driver,then click [Configure] to into the interface of AK100 settings, as shown in figure 4.6.

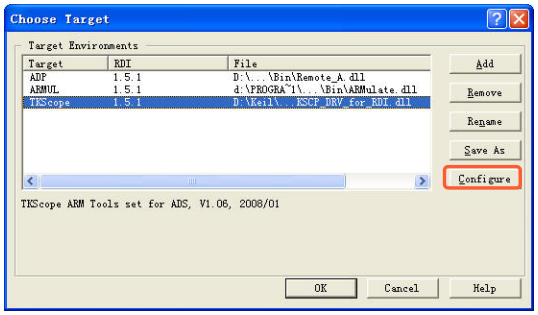


Figure 4.5 driver file installed

6 The interface of AK100 settings is the same in any IDE environment (for example,figure 4.6 in ADS and figure 3.3 in Keil RealView MDK),the method of settings is also the same.

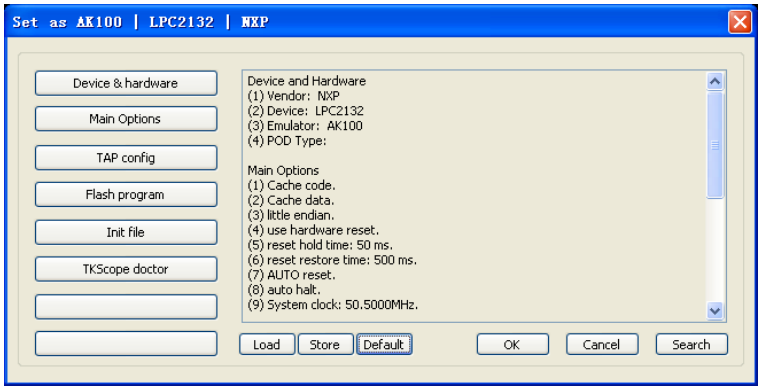


Figure 4.6 AK100 settings interface

Users must correctly set the configurations of AK100,otherwise,AK100 will not work normally.
The method of settings is not described repeatedly in here,users please refer to the 3.2 section<Emulator settings>.

4.2 Debugging

In AXD,driver is installed OK and AK100 emulator is setted right,users can use it debugging.

4.2.1 Debugging tools

Table 4.1 debugging tools in AXD

icon	meaning
	Go
	Stop
	Step In
	Step
	Step Out
	Run To Cursor
	Toggle BreakPoint

Table 4.2　watching tools in AXD

Icon	meaning
	Processor Registers
	Processor Watch
	Context Variable
	Memory
	Disassembly

Table 4.3　file operation tools in AXD

Icon	meaning
	Load Image
	Reload Current Image

4.2.2 Debugging results

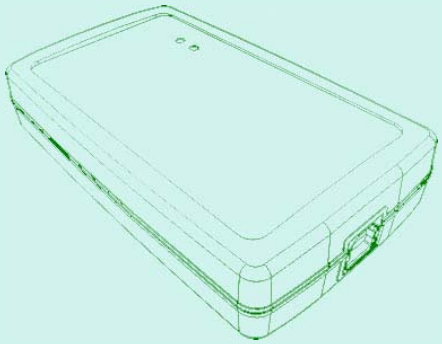
After debugging over,users can close AXD interface to exit the state of debugging.

If users debug in RAM,the programs written in the chip RAM will lost after power down.Programs will not run in target board if power up again.

If users debug in Flash,the programs written in the Flash will save after power down.Programs will run in target board if power up again.

If users debug in Flash and encryption,programs will run in target board if power up again,but users can not debug.Unless, users erase global chip by ISP spftware,then can debug again.

Chapter 5
Emulation ARM In IAR



5.1 Add driver file **31**

5.2 Debugging **33**

5.2.1 Start debugging 33

5.2.2 Debugging tools 34

5.2.3 Debugging results 35

5.1 Add driver file

1 In IAR,open the project that is compiled ok.Select the project,click the right botton of mouse,then select the [Options],as shown in figure 5.1.

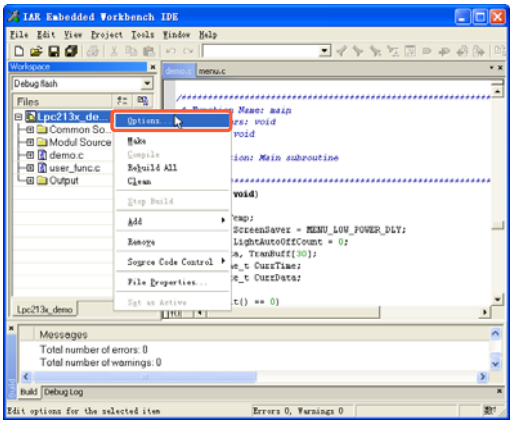


Figure 5.1 IAR interface

2 Select [Debugger] option,[Setup] window in right side is setted as shown in figure 5.2. [Driver] option is selected [Third-Party Driver] and [Run to main].

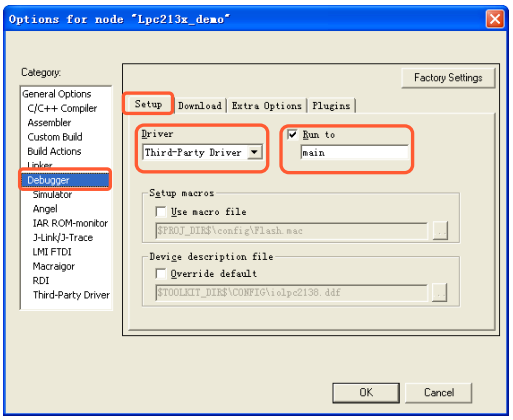


Figure 5.2 Debugger Setup interface

3 In figure 5.2,click [Download] option,the interface of settings is as shown in figure 5.3,all the options don't need to select.

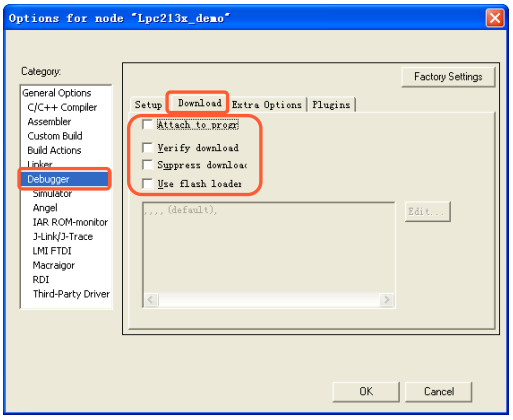


Figure 5.3 Debugger Download interface

4 Select [Third-Party Driver] option,the interface is as shown in figure 5.4. Click .. icon to add the driver file of AK100.

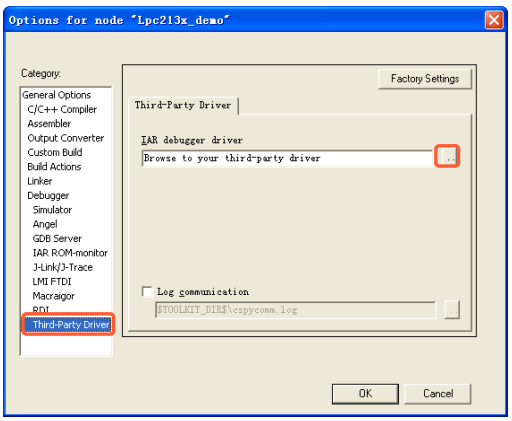


Figure 5.4 Third-Party Driver interface

5 The system will pop-up dialog box as shown in figure 5.5,users open the installation directory of AK100 driver(example is C:\Keil\TKScope).

If you use IAR V4,select the driver file is TKSCP_DRV_ARM_for_IAR_v4.dll;

If you use IAR V5,select the driver file is TKSCP_DRV_ARM_for_IAR_v5.dll;

If you use IAR V6,select the driver file is TKSCP_DRV_ARM_for_IAR_v6.dll.

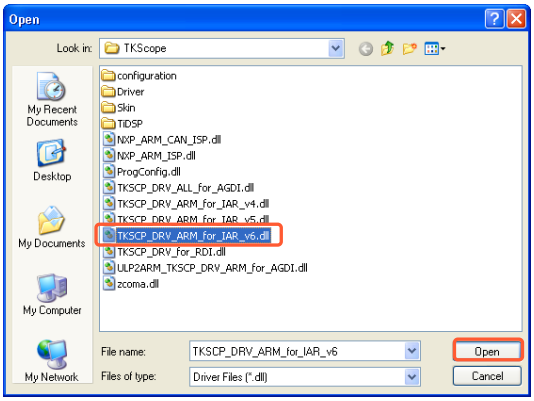


Figure 5.5 select driver file

6 Driver file installed,the [Third-Party Driver] window will display the currently installed driver option,as shown in figure 5.6.

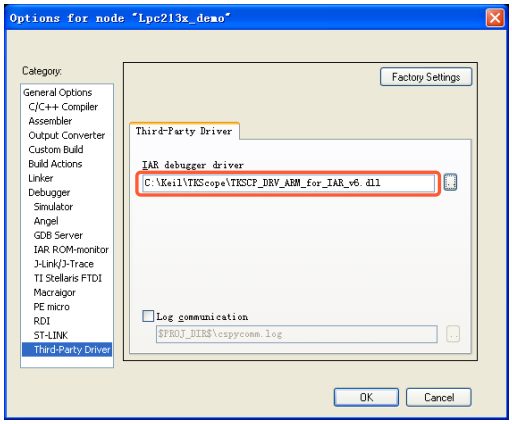


Figure 5.6 driver file installed

7 IAR main menu will display [TKScope] option after driver file installed,as shown in figure 5.7.

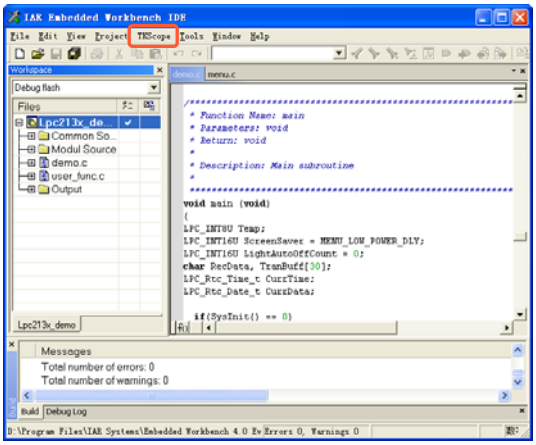


Figure 5.7 main interface

8 Users can select [Setup] option in [TKScope] menu to into the interface of AK100 settings,as shown in figure 5.8.

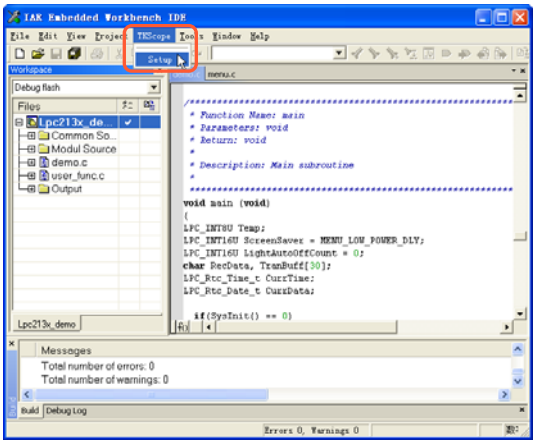


Figure 5.8 select AK100 settings

9 The interface of AK100 settings is the same in any IDE environment (for example,figure 5.9 in IAR and figure 3.3 in Keil RealView MDK),the method of settings is also the same.

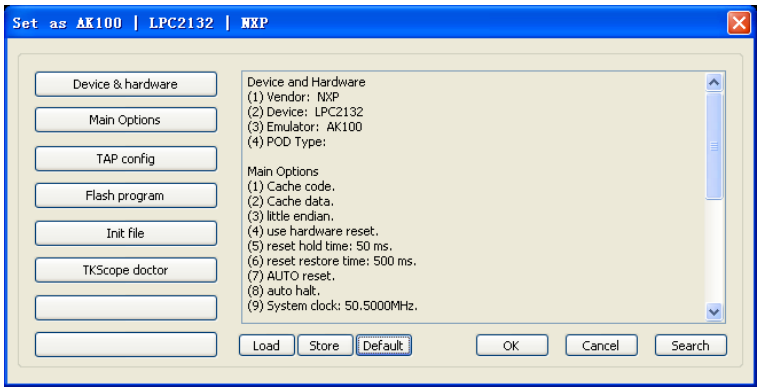


Figure 5.9 AK100 settings interface

Users must correctly set the configurations of AK100,otherwise,AK100 will not work normally.
The method of settings is not described repeatedly in here,users please refer to the 3.2 section<Emulator settings>.

5.2 Debugging

AK100 emulator is setted right,users can use it debugging.

5.2.1 Start debugging

Users can click [Debug] in [Project] menu or click coin to into the state of debugging,as shown in figure 5.10.

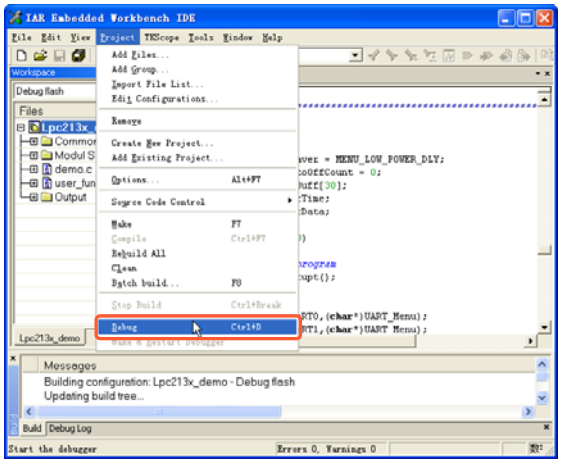


Figure 5.10 start debugging

5.2.2 Debugging tools

In IAR,users can use many debugging tools as shown in follows.

Table 5.1 debugging tools in IAR

icon	meaning
	Make and Debug
	Toggle Breakpoint
	Reset
	Break
	Step Over
	Step Into
	Step Out
	Next Statement
	Run to Cursor
	Go
	Stop Debugging

Users can open windows under [View] menu to watch results in debugging,as shown in figure 5.11.

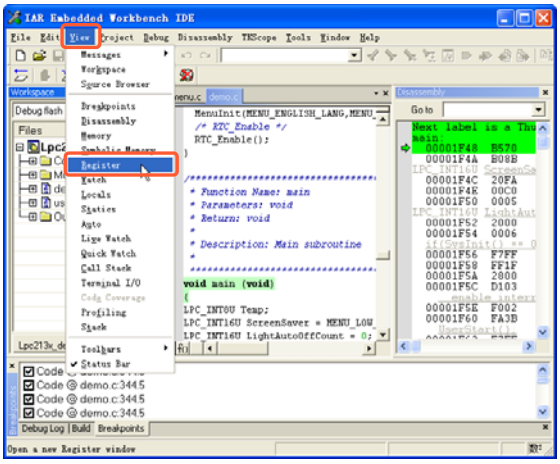


Figure 5.11 open view windows

5.2.3 Debugging results

After debugging over,users can click coin to exit the state of debugging.

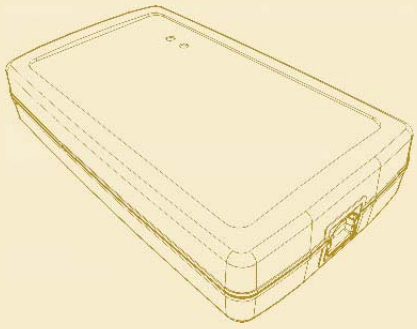
If users debug in RAM,the programs written in the chip RAM will lost after power down.Programs will not run in target board if power up again.

If users debug in Flash,the programs written in the Flash will save after power down.Programs will run in target board if power up again.

If users debug in Flash and encryption,programs will run in target board if power up again,but users can not debug. Unless,users erase global chip by ISP spftware,then can debug again.

Chapter 6

Emulation ARM In TKStudio



6.1 IDE settings **37**

6.2 Debugging **38**

6.2.1 Start debugging 38

6.2.2 Debugging tools 39

6.2.3 Debugging results 40

6.1 IDE settings

1 In TKStudio,open the project that is compiled ok, as shown in figure 6.1.Users can click icon to into the interface of project settings,as shown in figure 6.2.

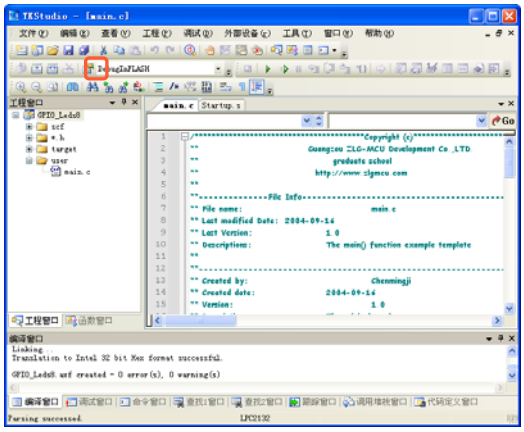


Figure 6.1 TKStudio interface

2 Open [ARM Debug] option in [Debuger],then select [Hardware Emulation] in the right side window,as shown in figure 6.2.

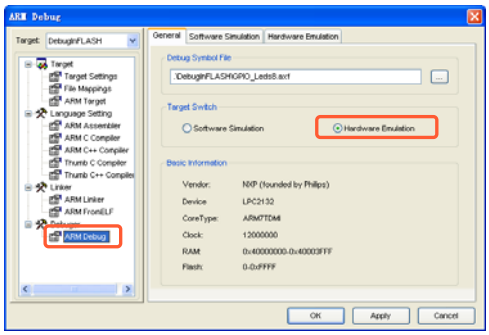


Figure 6.2 project settings

3 Open [Hardware Emulation] interface,as shown in figure 6.3.Click [Add] to add the driver file of AK100.

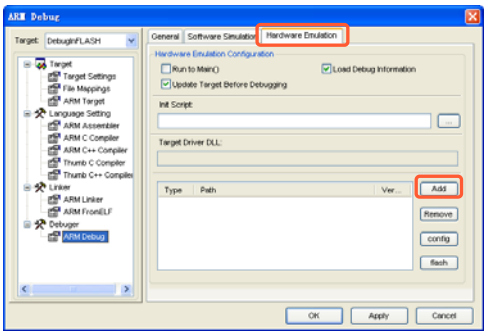


Figure 6.3 Hardware Emulation interface

4 The system will pop-up dialog box as shown in figure 6.4,users need to select the type of driver interface. Example,users select RDI,then click [OK].

Figure 6.4 driver interface type

5 Users open the installation directory of AK100 driver (example is C:\Keil\TKScope),then select TKSCP_DRV _for_RDI.dll as shown in figure 6.5.

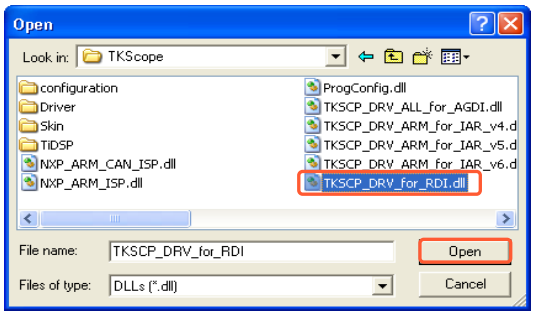


Figure 6.5 select driver file

6 Driver file installed,the [Hardware Emulation] window will display the currently installed driver option,as shown in figure 6.6.Users select AK100 driver,then click [Config] to into the interface of AK100 settings, as shown in figure 6.7.

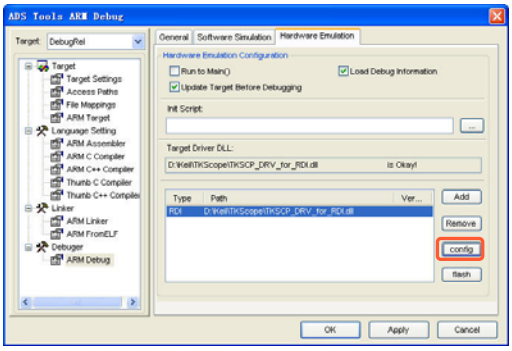


Figure 6.6 driver file installed

7 The interface of AK100 settings is the same in any IDE environment (for example,figure 6.7 in TKStudio and figure 3.3 in Keil RealView MDK),the method of settings is also the same.

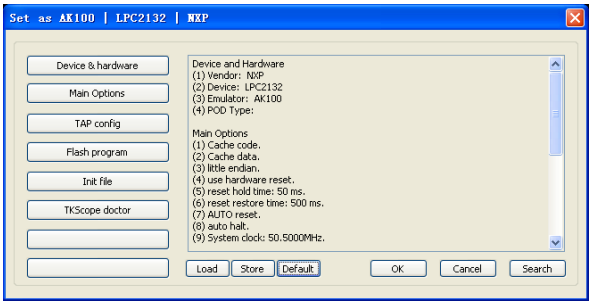


Figure 6.7 AK100 settings interface

Users must correctly set the configurations of AK100,otherwise,AK100 will not work normally.
The method of settings is not described repeatedly in here,users please refer to the 3.2 section<Emulator settings>.

6.2 Debugging

AK100 emulator is setted right,users can use it debugging.

6.2.1 Start debugging

Users can click [Start/Stop Debug] option in [Debug] menu or click coin to into the state of debugging,as shown in figure 6.8.

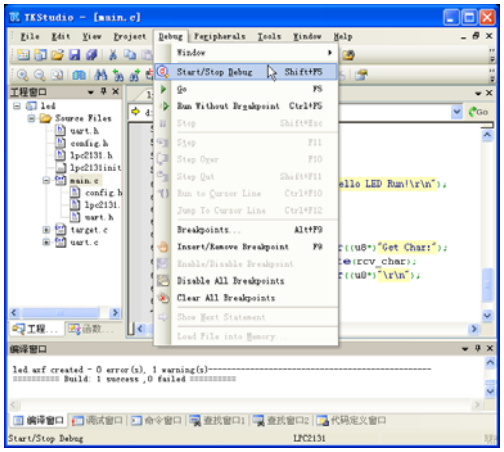


Figure 6.8 debugging interface

6.2.2 Debugging tools

In TKStudio,users can use many debugging tools as shown in follows.

Table 6.1 debugging tools in TKStudio

Icon	meaning
	Start/Stop Debug
	Reset CPU
	Go
	Run Without Breakpoint
	Stop
	Step into
	Step over
	Step out
	Run To Cursor line
	Insert/Remove Breakpoint
	Enable/Disable Breakpoint
	Disable All Breakpoints
	Clear All Breakpoints

Table 6.2 watching tools in TKStudio

Icon	meaning
	Disassembly Window
	Watch Window
	Memory Window
	Register Window
	SFRS Window

6.2.3 Debugging results

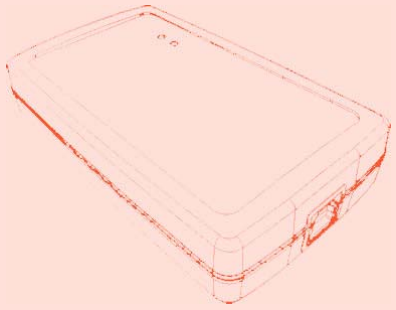
After debugging over,users can click [Start/Stop Debug Session] option in [Debug] menu or click coin to exit the state of debugging.

If users debug in RAM,the programs written in the chip RAM will lost after power down.Programs will not run in target board if power up again.

If users debug in Flash,the programs written in the Flash will save after power down.Programs will run in target board if power up again.

If users debug in Flash and encryption,programs will run in target board if power up again,but users can not debug. Unless,users erase global chip by ISP spftware,then can debug again.

Chapter 7
Technical Support



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7.1 Update method

AK100 emulator will upgrade incessantly,will support the new chips of each companys.The method of AK100 upgrading is updating software.Users download and install the new driver,then can debug the new chips.

The driver of AK100 emulator announces in ZLG web http://www.zlgmcu.com,users can download the new driver freely at any moment.

7.2 Contact us

Thanks for using AK100 emulator,we will provide the best technical support with you and help you to solve the problems in development for using emulator.We suggest that you contact with us by following methods,so we can solve problems quickly and save your times.

1 TEL/FAX

It is the best method that we communicate by phone, and we can solve problems quickly.Before you call up, please collate your problems and put the emulator next to computer and phone.
TEL:020-22644360,28267808,

2 Email

You can give us email to describe your problems in detail and offer demo programs,so we can help you analyze problems in the round.
Email: TKS@zlgmcu.com .

3 BBS

Welcome to BBS of ZLG http://www.zlgmcu.com.cn/index.asp,we open the special BBS for emulator.You can write out your problems,our engineers will give you answers,and other net friends will also give you answers.

4 Maintenance

If your emulator break down in using,please deliver it to us.We will provide the perfessional maintenance.
Company: Guangzhou Zhiyuan Electronics Co.,Ltd.
Address:4 floor 3 building,Huangzhou industrial zone, Chebei road,Tianhe district,Guangzhou city.
TEL:020-22644245.

Users must correctly set the configurations of emulator,otherwise,emulator will not work normally.So the problems of emulator are usually due to the wrong configurations of emulator.

If you consider the emulator is breaken down,we suggest that you contact with us before delivery.Our engineers will confirm the emulator is breaken down whether or not.

7.3 Thanks

AK100 is a high-performance ARM emulator, which designed by Guangzhou Zhiyuan Electronics Co.,Ltd. in 2009.It supports a full range of ARM7 / ARM9 / Cortex-M0 / Cortex-M1 / Cortex-M3 / XSCALE etc.AK100 communicates with PC by USB2.0 (High Speed) interface,the speed is very fast. AK100 can beat all the emulators by its perfect performances.

Thanks for using AK100 emulator again.It will give you help and surprise.Believe it and believe ZLG!

Appendix Support Chip List

AK100 emulator supports many chips and companys,and will support new chips incessantly by upgrading. At present,the chips that AK100 emulator supported list as follows.

- **Actel**

  Cortex-M3 core

  A2F200M3A,A2F200M3B,A2F200M3C,A2F200M3D,A2F200M3E,A2F200M3F,A2F500M3A,A2F500M3B,A2F500M3C, A2F500M3D,A2F500M3E,A2F500M3F,A2F500M3G

  other chips supported incessantly

- **AMD**

  Flash chip AM29F160DB,AM29F160DT,AM29F320DB,AM29F320DT,AM29F800BB,AM29F800BT,AM29LV128, AM29LV800BB, AM29LV800BT,AM29LV800DB

  other chips supported incessantly

- **Analog Device**

  ARM core ADuC7019BCPZ62,ADuC7020BCPZ62,ADuC7021BCPZ62,ADuC7021BCPZ32,ADuC7022BCPZ32, ADuC7022BCPZ32,ADuC7023BCPZ62I,ADuC7024BCPZ62,ADuC7025BCPZ62,AduC7025BCPZ32, ADuC7026BSTZ62,ADuC7027BSTZ62,ADuC7028BBCZ62,ADuC7029BBCZ62,ADUC7030,ADUC7032, ADUC7033,ADUC7034,ADUC7036,ADUC7037,ADUC7038,ADUC7039,ADUC7060,ADUC7061, ADUC7062,ADUC7121,ADUC7122,ADUC7124,ADUC7126,ADUC7128,ADUC7129

  other chips supported incessantly

- **ARM**

  ARM core ARM720T,ARM7EJ-S,ARM7TDMI,ARM7TDMI-S,ARM9TDMI,ARM920T,ARM922T,ARM926EJ-S,ARM946E-S, ARM966E-S,ARM968E-S,ARM1136,ARM1156,ARM1176,Cortex-M0,Cortex-M1,Cortex-M3,Cortex-M4

  other cores supported incessantly

- **ATMEL**

  ARM core AT91SAM7A1,AT91SAM7A2,AT91SAM7A3,AT91SAM7SE32,AT91SAM7SE256,AT91SAM7SE512, AT91SAM7S16, AT91SAM7S161,AT91SAM7S32,AT91SAM7S321,AT91SAM7S64,AT91SAM7S128, AT91SAM7S256, AT91SAM7S512,AT91SAM7X128,AT91SAM7X256,AT91FR40162S,AT91FR40162SB,AT91M40800,AT91M40807, AT91R40008,AT91R40807

  other chips supported incessantly

  Cortex-M3 core

  AT91SAM3U4E,AT91SAM3U2E,AT91SAM3U1E,AT91SAM3U4C,AT91SAM3U2C,AT91SAM3U1C

  other chips supported incessantly

  Flash chip AT29C1024,AT29LV1024,AT49BV162A,AT49BV162AT,AT49BV320,AT49BV320T,AT49BV321,AT49BV321T, AT49BV1604A,AT49BV1614A,AT49BV6416,AT49LV320,AT49LV320T,AT49LV321,AT49LV321T,AT49LV1614A

  other chips supported incessantly

- **Cirrus Logic**

  ARM core chips are about to support

- **EnergyMicro**

  Cortex-M3 core

  Gecko series

  EFM32G200F16,EFM32G200F32,EFM32G200F64,EFM32G210F128,EFM32G222F128,EFM32G222F32,
  EFM32G222F64,EFM32G230F128,EFM32G230F32,EFM32G230F64,EFM32G232F128,EFM32G232F32,
  EFM32G232F64,EFM32G280F128,EFM32G280F32,EFM32G280F64,EFM32G290F128,EFM32G290F32,
  EFM32G290F64,EFM32G840F128,EFM32G840F32,EFM32G840F64,EFM32G842F128,EFM32G842F32,
  EFM32G842F64,EFM32G880F128,EFM32G880F32,EFM32G880F64,EFM32G890F128,EFM32G890F32,
  EFM32G890F64

  Giant Gecko series

  EFM32GG230F1024,EFM32GG230F512,EFM32GG232F1024,EFM32GG232F512,EFM32GG280F1024,
  EFM32GG280F512,EFM32GG290F1024,EFM32GG290F512,EFM32GG295F1024,EFM32GG295F512,
  EFM32GG330F1024,EFM32GG330F512,EFM32GG332F1024,EFM32GG332F512,EFM32GG380F1024,
  EFM32GG380F512,EFM32GG390F1024,EFM32GG390F512,EFM32GG395F1024,EFM32GG395F512,
  EFM32GG840F1024,EFM32GG840F512,EFM32GG842F1024,EFM32GG842F512,EFM32GG880F1024,
  EFM32GG880F512,EFM32GG890F1024,EFM32GG890F512,EFM32GG895F1024,EFM32GG895F512,
  EFM32GG940F1024,EFM32GG940F512,EFM32GG942F1024,EFM32GG942F512,EFM32GG980F1024,
  EFM32GG980F512,EFM32GG990F1024,EFM32GG990F512,EFM32GG995F1024,EFM32GG995F512

  Leopard Gecko series

  EFM32LG230F128,EFM32LG230F256,EFM32LG230F64,EFM32LG232F128,EFM32LG232F256,
  EFM32LG232F64,EFM32LG280F128,EFM32LG280F256,EFM32LG280F64,EFM32LG290F128,
  EFM32LG290F256,EFM32LG290F64,EFM32LG295F128,EFM32LG295F256,EFM32LG295F64,
  EFM32LG330F128,EFM32LG330F256,EFM32LG330F64,EFM32LG332F128,EFM32LG332F256,
  EFM32LG332F64,EFM32LG380F128,EFM32LG380F256,EFM32LG380F64,EFM32LG390F128,
  EFM32LG390F256,EFM32LG390F64,EFM32LG395F128,EFM32LG395F256,EFM32LG395F64,
  EFM32LG840F128,EFM32LG840F256,EFM32LG840F64,EFM32LG842F128,EFM32LG842F256,
  EFM32LG842F64,EFM32LG880F128,EFM32LG880F256,EFM32LG880F64,EFM32LG890F128,
  EFM32LG890F256,EFM32LG890F64,EFM32LG895F128,EFM32LG895F256,EFM32LG895F64,
  EFM32LG940F128,EFM32LG940F256,EFM32LG940F64,EFM32LG942F128,EFM32LG942F256,
  EFM32LG942F64,EFM32LG980F128,EFM32LG980F256,EFM32LG980F64,EFM32LG990F128,
  EFM32LG990F256,EFM32LG990F64,EFM32LG995F128,EFM32LG995F256,EFM32LG995F64

  Tiny Gecko series

  EFM32TG108F16,EFM32TG108F32,EFM32TG108F4,EFM32TG108F8,EFM32TG110F16,EFM32TG110F32,
  EFM32TG110F4,EFM32TG110F8,EFM32TG210F16,EFM32TG210F32,EFM32TG210F8,EFM32TG222F16,
  EFM32TG222F32,EFM32TG222F8,EFM32TG230F16,EFM32TG230F32,EFM32TG230F8,EFM32TG232F16,
  EFM32TG232F32,EFM32TG232F8,EFM32TG822F16,EFM32TG822F32,EFM32TG822F8,EFM32TG840F16,
  EFM32TG840F32,EFM32TG840F8,EFM32TG842F16,EFM32TG842F32,EFM32TG842F8

  other chips supported incessantly

- **Freescale**

  ARM core MAC7101,MAC7106,MAC7111,MAC7112,MAC7116,MAC7121,MAC7122,MAC7126,MAC7131,MAC7136, MAC7141,
  MAC7142

  other chips supported incessantly

- **Fujitsu**

  Cortex-M3 core

  MB9AF102NA,MB9AF104NA,MB9AF102RA,MB9AF104RA,MB9AF111L,MB9AF112L,MB9AF114L,MB9AF111M,
  MB9AF112M,MB9AF114M,MB9AF115M,MB9AF116M,MB9AF111N,MB9AF112N,MB9AF114N,MB9AF115N,

MB9AF116N,MB9AF131K,MB9AF132K,MB9AF131L,MB9AF132L,MB9AF311L,MB9AF312L,MB9AF314L,
MB9AF311M,MB9AF312M,MB9AF314M,MB9AF315M,MB9AF316M,MB9AF311N,MB9AF312N,MB9AF314N,
MB9AF315N,MB9AF316N,MB9BF104NA,MB9BF105NA,MB9BF106NA,MB9BF104RA,MB9BF105RA,
MB9BF106RA,MB9BF116S,MB9BF117S,MB9BF118S,MB9BF116T,MB9BF117T,MB9BF118T,MB9BF216S,
MB9BF217S,MB9BF218S,MB9BF216T,MB9BF217T,MB9BF218T,MB9BF304NA,MB9BF305NA,MB9BF306NA,
MB9BF304RA,MB9BF305RA,MB9BF306RA,MB9BF316S,MB9BF317S,MB9BF318S,MB9BF316T,MB9BF317T,
MB9BF318T,MB9BF404NA,MB9BF405NA,MB9BF406NA,MB9BF404RA,MB9BF405RA,MB9BF406RA,
MB9BF416S,MB9BF417S,MB9BF418S,MB9BF416T,MB9BF417T,MB9BF418T,MB9BF504NA,MB9BF505NA,
MB9BF506NA,MB9BF504RA,MB9BF505RA,MB9BF506RA,MB9BF516S,MB9BF517S,MB9BF518S,MB9BF516T,
MB9BF517T,MB9BF518T,MB9BF616S,MB9BF617S,MB9BF618S,MB9BF616T,MB9BF617T,MB9BF618T
other chips supported incessantly

- **Hynix**

  ARM core HMS30C7202

  other chips supported incessantly

- **MARVELL（Intel）**

  XSCALE core

  PXA255,PXA270

  other chips supported incessantly

- **NUVOTON（WinBOND）**

  ARM core NUC501

  other chips supported incessantly

  Cortex-M0 core

  NUC100LE3AN,NUC100RE3AN,NUC100RD3AN,NUC100VE3AN,NUC100VD3AN,NUC100VD2AN,NUC100LD2AN,
  NUC100LD1AN,NUC100LC1AN,NUC100RD2AN,NUC100RD1AN,NUC100RC1AN,NUC120LE3AN,NUC120LD3AN,
  NUC120RE3AN,NUC120RD3AN,NUC120VE3AN,NUC120VD3AN,NUC120VD2AN,NUC120LD2AN,NUC120LD1AN,
  NUC120LC1AN,NUC120RD2AN,NUC120RD1AN,NUC120RC1AN,NUC130LE3AN,NUC130LD3AN,NUC130LD2AN,
  NUC130RE3AN,NUC130RD3AN,NUC130RD2AN,NUC130VE3AN,NUC130VD3AN,NUC130VD2AN,NUC140LE3AN,
  NUC140LD3AN,NUC140LD2AN,NUC140RE3AN,NUC140RD3AN,NUC140RD2AN,NUC140VE3AN,NUC140VD3AN,
  NUC140VD2AN

  other chips supported incessantly

  Flash chip W19B320AB,W19B320AT,W19B320BB,W19B320BT

  other chips supported incessantly

- **NXP**

  ARM core LPC2101,LPC2102,LPC2103,LPC2104,LPC2105,LPC2106,LPC2109,LPC2114,LPC2119,LPC2124,LPC2129,
  LPC2194,LPC2131,LPC2132,LPC2134,LPC2136,LPC2138,LPC2141,LPC2142,LPC2144,LPC2146,LPC2148,
  LPC2157,LPC2158,LPC2194,LPC2210,LPC2212,LPC2214,LPC2220,LPC2290,LPC2292,LPC2294,LPC2364,
  LPC2365,LPC2366,LPC2367,LPC2368,LPC2377,LPC2378,LPC2387,LPC2388,LPC2458,LPC2460,LPC2468,
  LPC2470,LPC2478,LPC2880,LPC2888,LPC2917,LPC2919,LPC3130,LPC3131,LPC3141,LPC3143,LPC3152,
  LPC3154,LPC3180,LPC3220,LPC3230,LPC3240,LPC3250,LH7A400,LH7A404

  other chips supported incessantly

  Cortex-M3 core

LPC1751,LPC1752,LPC1754,LPC1756,LPC1758,LPC1764,LPC1765,LPC1766,LPC1768,LPC1311, LPC1313, LPC1342,LPC1343

other chips supported incessantly

Cortex-M0 core

LPC1111x101,LPC1111x201,LPC1112x101,LPC1112x201,LPC1113x101,LPC1113x201,LPC1114x101,LPC1114x201, LPC11U12x201,LPC11U13x201,LPC11U14x201,LPC1102,LPC1111x102,LPC1111x202,LPC1112x102,LPC1112x202, LPC1113x202,LPC1113x302,LPC1114x202,LPC1114x302,LPC11C12x301,LPC11C14x301,LPC11C22x301, LPC11C24x301,LPC11U12x201,LPC11U12x201,LPC11U13x201,LPC11U14x201,LPC11U14x201,LPC11U14x201, LPC11U23x301,LPC11U24x/301,LPC11U24x401,LPC11U24x401,LPC11U24x301,LPC11U24x301,LPC11U24x401, LPC1224x101,LPC1224x121,LPC1225x301,LPC1225x321,LPC1226x301,LPC1227x301

other chips supported incessantly

- **OKI**

  ARM core chips are about to support

- **Samsung**

  ARM core S3C44B0X,S3C2410A,S3C2416X,S3C2440A,S3C2510A,S3C4510

  other chips supported incessantly

- **SST**

  Flash chip SST36VF1601,SST36VF1602,SST36VF3203,SST36VF3204,SST39LF200A,SST39LF400A,SST39LF800A, SST39VF1601,SST39VF1602,SST39VF3201,SST39VF3202,SST39VF6401,SST39VF6402,SST39WF400A, SST39WF800A,SST39WF1601,SST39WF1602

  other chips supported incessantly

- **ST**

  ARM core STR710FZ1,STR710FZ2,STR711FR0,STR711FR1,STR711FR2,STR712FR0,STR712FR1,STR712FR2, STR715FR0,STR730FZ1,STR730FZ2,STR731FV0,STR731FV1,STR731FV2,STR735FZ1,STR735FZ2, STR736FV0,STR736FV1,STR736FV2,STR750FV0,STR750FV1,STR750FV2,STR751FR0,STR751FR1, STR751FR2,STR752FR0,STR752FR1,STR752FR2,STR755FR0,STR755FR1,STR755FR2,STR755FV0, STR755FV1,STR755FV2,STR910FM32X6,STR910FW32X6,STR910FAZ32H6,STR911FM42X6,STR911FM44X6, STR912FW42X6,STR912FW44X6,STR912FAZ42H6

  other chips supported incessantly

  Cortex-M3 core

  STM32F100C4,STM32F100R4,STM32F100C6,STM32F100R6,STM32F100C8,STM32F100R8,STM32F100V8, STM32F100CB,STM32F100RB,STM32F100VB,STM32F100RC,STM32F100VC,STM32F100ZC,STM32F100RD, STM32F100VD,STM32F100ZD,STM32F100RE,STM32F100VE,STM32F100ZE,STM32F101C4,STM32F101R4, STM32F101T4,STM32F101C6,STM32F101R6,STM32F101T6,STM32F101C8,STM32F101R8,STM32F101V8, STM32F101T8,STM32F101RB,STM32F101VB,STM32F101CB,STM32F101RC,STM32F101VC,STM32F101ZC, STM32F101RD,STM32F101VD,STM32F101ZD,STM32F101RE,STM32F101VE,STM32F101ZE,STM32F101RF, STM32F101VF,STM32F101VG,STM32F101ZG,STM32F102C4,STM32F102R4,STM32F102C6,STM32F102R6, STM32F102C8,STM32F102R8,STM32F102CB,STM32F102RB,STM32F103C4,STM32F103R4,STM32F103T4, STM32F103C6,STM32F103R6,STM32F103T6,STM32F103C8,STM32F103R8,STM32F103V8,STM32F103T8, STM32F103RB,STM32F103VB,STM32F103CB,STM32F103TB,STM32F103RC,STM32F103VC,STM32F103ZC, STM32F103RD,STM32F103VD,STM32F103ZD,STM32F103RE,STM32F103VE,STM32F103ZE,STM32F103RF, STM32F103VF,STM32F103ZF,STM32F103RG,STM32F103VG,STM32F103ZG,STM32F105R8,STM32F105V8,

STM32F105RB,STM32F105VB,STM32F105RC,STM32F105VC,STM32F107RB,STM32F107VB,STM32F107RC,
STM32F107VC,STM32F205RB,STM32F205VB,STM32F205RC,STM32F205VC,STM32F205ZC,STM32F205RE,
STM32F205VE,STM32F205ZE,STM32F205RF,STM32F205VF,STM32F205ZF,STM32F205RG,STM32F205VG,
STM32F205ZG,STM32F207IC,STM32F207VC,STM32F207ZC,STM32F207IE,STM32F207VE,STM32F207ZE,
STM32F207IF,STM32F207VF,STM32F207ZF,STM32F207IG,STM32F207VG,STM32F207ZG,STM32F215RE,
STM32F215VE,STM32F215ZE,STM32F215RG,STM32F215VG,STM32F215ZG,STM32F217IE,STM32F217VE,
STM32F217ZE,STM32F217IG,STM32F217VG,STM32F217ZG,STM32L151C8,STM32L151R8,STM32L151V8,
STM32L151CB,STM32L151RB,STM32L151VB,STM32L152C8,STM32L152R8,STM32L152V8,STM32L152CB,
STM32L152RB,STM32L152VB,STM32W108C8,STM32W108CB,STM32W108CC,STM32W108CZ,STM32W108HB
other chips supported incessantly

- **TI（Luminary Micro）**

  ARM core TMS470R1A64,TMS470R1A128,TMS470R1A256
  other chips supported incessantly

  Cortex-M3 core

  LM3S101,LM3S102 ,LM3S300,LM3S301,LM3S308,LM3S310,LM3S315,LM3S316,LM3S317,LM3S328,LM3S600,
  LM3S601,LM3S608,LM3S610,LM3S611,LM3S612,LM3S613,LM3S615,LM3S617,LM3S618, LM3S628,LM3S800,
  LM3S801,LM3S808,LM3S811,LM3S812,LM3S815, LM3S817,LM3S818,LM3S828, LM3S1110,LM3S1133,LM3S1138,
  LM3S1150,LM3S1162,LM3S1165,LM3S1332,LM3S1435,LM3S1439,LM3S1512,LM3S1538,LM3S1601,LM3S1607,
  LM3S1608,LM3S1620,LM3S1625,LM3S1626,LM3S1627,LM3S1635,LM3S1637,LM3S1751,LM3S1776,LM3S1850,
  LM3S1911,LM3S1918,LM3S1937,LM3S1958,LM3S1960,LM3S1968,LM3S2016,LM3S2110,LM3S2139,LM3S2276,
  LM3S2410,LM3S2412,LM3S2432,LM3S2533,LM3S2601,LM3S2608,LM3S2616,LM3S2620,LM3S2637,LM3S2651,
  LM3S2671,LM3S2678,LM3S2730,LM3S2739,LM3S2776,LM3S2911,LM3S2918,LM3S2939,LM3S2948,LM3S2950,
  LM3S2965,LM3S3739,LM3S3748,LM3S3749,LM3S3651,LM3S3759,LM3S3768,LM3S5632,LM3S5732,LM3S5737,
  LM3S5739,LM3S5747,LM3S5749,LM3S5652,LM3S5662,LM3S5752,LM3S5757,LM3S5762,LM3S5767,LM3S5768,
  LM3S5769,LM3S6100,LM3S6110,LM3S6420,LM3S6422,LM3S6432,LM3S6537,LM3S6610,LM3S6611,LM3S6618,
  LM3S6633,LM3S6637,LM3S6730,LM3S6753,LM3S6816,LM3S6911,LM3S6916,LM3S6918,LM3S6938,LM3S6950,
  LM3S6952,LM3S6965,LM3S8530,LM3S8538,LM3S8630,LM3S8730,LM3S8733,LM3S8738,LM3S8930,LM3S8933,
  LM3S8938,LM3S8962,LM3S8970,LM3S8971,LM3S9790,LM3S9792,LM3S9997,LM3S9B90,LM3S9B92,LM3S9B95,
  LM3S9B96,LM3S9L97
  other chips supported incessantly

- **TOSHIBA**

  Cortex-M3 core

  TMPM330FDFG,TMPM330FYFG,TMPM330FWFG,TMPM332FWUG,TMPM370FYDFG,TMPM370FYFG,
  TMPM380FYDFG,TMPM380FYFG
  other chips supported incessantly